

**IN THE CLAIMS:**

Please amend the claims as follows:

Claim 1 (Withdrawn): A two-dimensional modulation method for hologram recording for generating coherent light containing therein page data through spatial light modulator having a plurality of pixels two-dimensionally arranged therein,

wherein said pixels of said spatial light modulator are partitioned into a plurality of blocks consisting of  $m$  pixels (where  $m =$  an integral number) adjacent to each other, and a boundary portion which has a width having at least the width of one pixel in said spatial light modulator or of one pixel of an image detecting sensor used to reproduce the recorded page data and the distance between the adjacent pixels in each of said blocks, and which shields light is provided between the adjacent blocks.

Claim 2 (Withdrawn): The two-dimensional modulation method for hologram recording according to claim 1, comprising the steps of:

grouping data to be recorded into blocks per  $n$  bits (where  $n < m$ , and  $n =$  an integral number);

generating page data by carrying out the two-dimensional modulation for allocating  $m$  bit data to each block, per  $n$  bits, which is obtained by the grouping by referring to a modulation table; and

driving said spatial light modulator according to the resulting page data;  
wherein in said step of generating page data, boundary data for said boundary portion is added to each of said blocks.

Claim 3 (Withdrawn): The two-dimensional modulation method for hologram recording according to claim 2, further comprising the step of:

generating page data for a boundary with which said boundary is provided,  
wherein said page data for the boundary and two-dimensionally modulated data are  
superimposed on each other in order to drive said spatial light modulator.

Claim 4 (Withdrawn): The two-dimensional modulation method for hologram recording according to claim 1, wherein each of said pixels of said spatial light modulator is constituted by a plurality of sub-pixels, and for the pixel which should shield light, all the sub-pixels of the pixel concerned are made in a light shielding state, and for the pixel which should transmit light, a part of the sub-pixels of the pixel concerned is made in a light shielding state, and the remaining sub-pixels are made in a light transmitting state, and when the pixel which should transmit light is adjacent to said adjacent blocks, said sub-pixels of the pixel concerned in the light shielding state are arranged between the adjacent blocks so as to constitute a part of said boundary portion.

Claim 5 (Currently Amended): A hologram apparatus provided with comprising  
a spatial light modulator having a plurality of pixels two-dimensionally arranged therein  
and irradiating coherent light containing therein page data to be recorded on a hologram  
recording carrier through said spatial light modulator to record information with an optical  
interference pattern generated by the coherent light as a diffraction grating,  
wherein said spatial light modulator comprises a plurality of blocks consisting of m  
pixels (where m = an integral number) adjacent to each other, and a boundary portion which is

provided between the adjacent blocks and has a width having at least the width of one pixel of said spatial light modulator or of one pixel of an image detecting sensor used to reproduce the recorded page data and the distance between the adjacent pixels in each of said blocks, and which shield light; and

an encoder for driving said spatial light modulator so as to display a plurality of continuous pixels in a light shielding state as said boundary portion,

wherein said encoder groups data to be recorded into blocks per n bits (where n<m, and n = an integral number);

wherein said encoder generates page data by carrying out two-dimensional modulation for allocating m bit data to each block per n bits by referring to a modulation table;

wherein said encoder drives said spatial light modulator according to the resulting page data; and

wherein said encoder adds boundary portion data for said boundary portion to each of said blocks when generating the page data.

Claims 6-7 (Canceled).

Claim 8 (Currently Amended): The hologram apparatus according to claim [[7]] 5, wherein said boundary generating portion encoder generates page data for a boundary portion with which said boundary portion is provided, and drives said spatial light modulator so that the page data for a boundary portion and two-dimensionally modulated data are superimposed on each other.

Claim 9 (Currently Amended): The hologram apparatus according to claim [[6]] 5, wherein said ~~boundary generating portion~~ encoder drives said spatial light modulator so that each of said pixels of said spatial light modulator is constituted by a plurality of sub-pixels, and for the pixel which should shield light, all the sub-pixels of the pixel concerned are made in a light shielding state, and for the pixel which should transmit light, a part of the sub-pixels of the pixel concerned is made in a light shielding state, and the remaining sub-pixels are made in a light transmitting state, and when the pixel which should transmit light is adjacent to said adjacent blocks, said sub-pixels of the pixel concerned in the light shielding state are arranged between the adjacent blocks so as to constitute a part of said boundary portion.

Claim 10 (Withdrawn): The hologram apparatus according to claim 5, wherein said boundary portion is formed in advance as a light shielding portion of said spatial light modulator.

Claim 11 (Withdrawn): The hologram apparatus according to claim 10, wherein at least a part of a driving circuit of said spatial light modulator is disposed in said light shielding portion, which is formed in advance, of said spatial light modulator.